Amendments to the Specification:

Please replace the paragraph appearing at page 6, lines 14-21 with the following amended paragraph:

On the other hand, JP-A 2000-309868 discloses a method in a sputtering apparatus using argon gas, wherein the pressure of the vacuum chamber is increased in a plasma generating step, so as to ensure the generation of the plasma. Nevertheless, this method is required to ~~rise~~ raise the pressure, and is not directly applicable to the plasma doping process, which is extremely sensitive to impurities.

Please replace the paragraph appearing at page 24, lines 21-26 with the following amended paragraph:

A plasma doping method according to a second embodiment of the present invention is described below with reference to FIG. 1, which has ~~bee~~ been used similarly in the description of the first embodiment. The description made in the first embodiment as to FIG. 1 is applied to the second embodiment similarly.

Please replace the paragraph appearing at page 33, line 20 through page 3, line 8 with the following amended paragraph:

A high frequency power supply 16 is provided to supply a high frequency electric power of 500 kHz to a bias electrode 15 provided between the coil 8 and the dielectric window 7. The bias electrode 15 is composed of a large number of strip-shaped electrodes arranged in a radial manner as known in the art. The longitudinal direction of each strip-shaped electrode is arranged perpendicular to the conductor of the spiral coil 8. This arrangement of the bias electrode 15 allows the high frequency electromagnetic field emitted from the coil 8 to enter almost completely into the vacuum chamber 1. The bias electrode 15 covers almost entire area of the dielectric window 7, so as to control the amount of boron sputtered from the boron-containing quartz glass of the dielectric window 7 into the plasma. In the output of the high frequency power supply 5, provided is a reflection wave detecting circuit 20 comprising a band pass filter

17 and a reflection wave meter 18. The band pass filter 17 is provided as a circuit to eliminate ~~the influence of which~~ the modulation caused by the high frequency electric power of 500 kHz supplied from the high frequency power supply 16 ~~gives to~~ in the detection of the reflection wave of the high frequency electric power of 13.56 MHz supplied from the high frequency power supply 5. The band pass filter 17 also eliminates the influence of which the plasma sheath thickness in the surface of the dielectric window 7 varies at 500 KHz of frequency by supplying the high frequency electric power of 500 kHz. The band pass filter 17 extracts solely the 13.56-MHz component from the reflection wave of the high frequency electric power of 13.56 MHz, so as to transmit the component to the reflection wave meter 18. In this configuration, the processing is performed in the state that the reflection wave of the high frequency electric power of 13.56 MHz is monitored by the reflection wave meter 18. This permits real-time detection of troubles in the matching state and in the 13.56-MHz high frequency power supply.

Please replace the paragraph appearing at page 37, line 26 through page 38, line 15 with the following amended paragraph:

The method according to the invention is effective also in the case that electron cyclotron resonance (ECR) plasma is used. However, the method is effective especially in the case of plasma other than the ECR plasma. The ECR plasma has the advantage that the plasma generation is easy even at low pressures. Nevertheless, apparatuses using the ECR plasma have a strong DC magnetic field in the vicinity of the sample. Therefore, charge separation of electrons and ions is liable to occur, and hence it has a disadvantage which is inferior in uniformity of a doping amount. The low density doping which is excellent in uniformity can be realized by applying the present invention to a plasma doping method using other high density plasma source without using ~~of~~ the ECR plasma.

Please replace the paragraph appearing at page 40, lines 7-26 with the following amended paragraph:

The matching circuit 33 for the plasma generating apparatus is marked and is known in the art, and is described simply with reference to the block diagram of FIG. 7. ~~In FIG. 7, the~~ The output terminal 33b in FIG. 7 is connected to the coil 8 in FIG. 6. When high frequency electric power is supplied from the high frequency power supply 5 to the input terminal 33a of the matching circuit 33, in response to a signal from a sensor 14, a computing circuit 15 outputs control signals to toroidal cores 16a and 16b. Consequently, the permeabilities of the toroidal cores 16a and 16b are changed, and thus the high frequency inductances change. Thereby, the matching circuit 33 is adjusted to a desired matching state. The matching circuit 33 for plasma generating apparatus uses the toroidal cores 16a and 16b which have no mechanically moving section and which can adjust the impedance in response merely to an electric signal. Thus, the time necessary for the matching is 1 milliseconds or shorter.

Please replace the paragraph appearing at page 42, line 18 through page 43, line10 with the following amended paragraph:

As described above, by performing plasma generation at a pressure higher than in the doping step, stable plasma generation is realizable. Therefore, a low density doping can be stably carried out by using ~~of~~ plasma composed mainly of helium causing only a reduced amount of ion irradiation damage to the sample. This permits stable low density doping. Further, in the step of generating the plasma, the high frequency electric power supplied to the plasma source is reduced. Thereby adverse influence to the sample during the generation step can be reduced. Furthermore, in the present embodiment, the matching circuit 33 for plasma generating apparatus is used, which comprises the toroidal cores 16a and 16b serving as two variable impedance elements without any mechanically moving section. Therefore, no large reflection wave occurs even when the control parameters are changed. This permits excellently reproducible processing.

Please replace the paragraph appearing at page 50, line 16 through page 51, line 5 with the following amended paragraph:

The method according to the invention is ~~effective also in the case that~~ is also effective when electron cyclotron resonance (ECR) plasma is used. However, the method is effective especially in the case of plasma other than the ECR plasma. The ECR plasma has the advantage that the plasma generation is easy even at low pressures. Nevertheless, apparatuses using ECR plasma have a strong DC magnetic field in the vicinity of the sample. Therefore, the charge separation of electrons and ions is liable to occur, and hence it has a disadvantage which is inferior in uniformity of a doping amount. The low density doping which is excellent in uniformity can be realized by applying the present invention to a plasma doping method using other high density plasma source without using ~~of~~ the ECR plasma.